FINANCIAL PERFORMANCE EFFICIENCY AND DETERMINANTS

A Study of Ethiopian Commercial Banks

SYNOPSIS OF THE

THESIS SUBMITTED FOR THE AWARD OF THE DEGREE OF

DOCTOR OF PHILOSOPHY
IN
COMMERCE AND MANAGEMENT STUDIES

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ANDHRA PRADISH, INDIA
February, 2013

Introduction

The role of banks in any economic development cannot be overemphasized. Banks serve as an important channel for economic growth through mobilizing financial savings from within and outside a country, allocating the financial resources to the most productive use by transforming different risks. Needless to say, banks play key roles in expanding and enhancing trade, commerce and industry. Efficient and profitable banks maximize shareholders' value and encourage the shareholders to make additional investments. As a result of which, more employment opportunities will be created and more goods and service will be produced and ultimately bring about economic growth. Banks are crucial for any country's economy particularly that of the economy of the developing countries such as Ethiopia, because no growth can be achieved if savings are not efficiently channeled into productive investment opportunities.

Essentially banks could be viewed as the heart of any economy as the malfunction of banks to operate efficiently and effectively causes the economy to suffer a lot. The financial crisis that the world has experienced over the last three decades, such as the financial crises of USA in 2008, of Russia in 1998 and Asia in 1997, substantiate this more than anything else. Thus, the performance of the banking system has been widely recognized as an important precondition for economic growth and for enhancing the economic and financial system buoyancy in facing financial crisis.

In a bid to enhance bank efficiency and competing practices among the banks as well as augment the general frameworks of the banking sector, governments in the emerging markets and the developing world have taken various measures over the last two decades. As part and parcel of the globe, the wind of financial liberalization and market deregulation,

though partially, has blown Ethiopia's financial sector in the early 1990s. Consequently, the Ethiopian financial sector has passed through significant reform process since 1994 as a part of the transition from a planned to a market economy. The financial reform was geared towards building a sound, competitive and well functioning financial system that supports sustainable economic growth and development.

Although the objective of the financial sector reform was to increase the role of financial markets in resource mobilization and allocation as well as providing sufficient funds to finance private and public investments, a gradual financial sector reform agenda has been put in action. Ethiopia seems to be inimitable compared to many of its neighboring counties like Kenya, Uganda, Tanzania, and many other developing countries in that it reserves the financial sector to its nationals only and does not allow any foreign national to take part in its financial sector in any form. Moreover, Ethiopia's financial sector is characterized by dominance of state ownership and low level of development.

However, though the financial liberalization has been gradual and results in disagreement with International Monetary Fund (IMF) over entry restriction for foreign nationals and the dominance of the state owned banks, it has allowed the private sector to take part in the financial sector; caused the state owned banks to be restructured; liberalized interest rate controls, and; given new powers of financial supervision and regulation to the country's central bank. Thus, following the economic liberalization in 1991 and that of the financial sector in 1994, the banking system in Ethiopia has been transformed from the absolute ownership of banks by the government to a system that allows private banks to operate in the country.

So much so, in Ethiopia financial markets are completely underdeveloped. Consequently, the role of channeling funds, from savers to

borrowers, falls on the shoulder of the commercial banks unlike in developed economies and often in transition economies where both the financial markets and the banking system work in accord in channeling the funds. To this effect, the banking sector in Ethiopia plays vital financial intermediary roles in economic development through mobilization of funds from within and outside the country and channeling such funds to various sectors of the economy. Moreover, the banking sector occupies a central place in the payment and settlement system of the country's economy. Needless to say, the cost of financial system and macroeconomic instability to the general public and the government is sizable. Hence, the health of the banking sector is very critical to the health of the country's overall economy at large. To keep imparting such vital roles in the country's overall economy, understanding how efficiently the banks are operating and identifying the determinants of their performance are very crucial. Thus, this study analyzes the efficiency of Ethiopian commercial banks and explores the key factors that affect the financial performance of the banks over the period 1999-00 to 2010-11.

Statement of the problem

The banking sector has been subject to research for so long and remains the topic of research priority primarily due to the critical role it plays in capital accumulation, firms' growth and economic advancement. The need to have healthy, efficient and profitable banks has called policymakers, academicians, managers, and researchers to rigorously put an eye on

the affairs of banks. Particularly, bank efficiency and determinants of bank performance are thoroughly examined in the banking literature. However, much of the existing studies on the banking industry go to the industrialized and emerging economies, if not all.

So much so, the inferences of the findings of the various studies carried out on banking firms in developed and emerging economies with reference to efficiency and determinants of financial performance of banks cannot be directly imported into banks in Ethiopia, because the banking sector in Ethiopia, in the Horn of Africa nation of more than 80 million people, is highly under stringent regulation and supervision, and is opaque to enter and absolutely padlocked for foreign nationals. Though the financial sector of the country is not well developed, the banking sector plays vital financial intermediary roles in terms of mobilizing deposits, enhancing private investment and financing various development related projects. Despite its magnificent role, the banking sector has not yet benefited from empirical research. As Kiyota el al. (2007) noted, the Ethiopian banking sector is not well explored to the level required notwithstanding the growth of banks both in terms of size and branch networking.

The limited stock of previous studies on Ethiopian banks have emphasized on aspects other than bank efficiency. For instance, Kapur and Gualu (2012) study the relationship between ownership structure and profitability of commercial banks in Ethiopia. Kiyota et al. (2007) study the case for financial liberalization in Ethiopia. Another study by Flamini et al. (2009) on bank profitability has considered Ethiopian banks as part of a larger sample pooled across a number of Sub-Sahara countries. None of these studies have looked into areas related to efficiency with particular reference to the technical efficiency, allocative efficiency, cost efficiency, and profit efficiency aspects of bank service provisions in the country. However, a banking sector like that of Ethiopia's which is highly concentrated and dominated by the state owned banks is of interest to examine how efficiently its actors are operating.

This is so because bank managers in highly concentrated markets may tend to give less attention to costs due to less competition and become operationally inefficient. This has induced the researcher to study the efficiency of Ethiopian commercial banks.

Furthermore, most of the studies in other countries on bank efficiency provide more attention on analyzing the level of cost efficiency of banks. However, since analyzing both cost and profit efficiency of banks provides full-fledged information to bank managers than the half-done image bestowed by analyzing cost efficiency, it is quite imperative to combine both cost efficiency estimates with profit efficiency estimates if one is to eloquently weigh up financial firm efficiency. Thus, this study examines both the cost and profit efficiency of the banks and indentifies whether higher level of inefficiency exists on the cost side or the revenue side.

Apart from the limited stock of knowledge on determinants of bank performance in Ethiopia, the lack of consensus in the banking literature on factors affecting bank profitability draws the need for the present study. For instance, the literature is inconclusive as far as the impact of bank size on bank profitability is concerned. While Kosmidou et al. (2006) for UK banks, Sufian and Habibullah (2009) for Bangladeshi banks, Kosmidou (2008) for Greece banks, have found economies of scale for larger banks, Sufian and Chong (2008) for Philippines banks, Funacova and Poghosyam (2011) for Russian banks, Pasiouras and Kosmidou (2007) for domestic banks in Europe, Dietrich and Wanzenried (2011) for Banks in Switzerland have found diseconomies of scale for larger banks. The impact of liquidity on bank profitability is also inconclusive in the banking literature. Haron (2004) for Islamic banks, Kosmidou et al. (2006) for UK banks, and Pasiouras and Kosmidou (2007) for EU domestic banks have found positive association between liquidity and bank profitability (ROA) whereas Dietrich and Wanzenried (2011) for banks in Switzerland, and Funacova and Poghosyam (2011) for Russian banks have found negative association between liquidity and

bank profitability (ROA). This implies that the determinants of bank performance are not conclusive and same across countries. Thus, the particular factors that influence the profitability of the commercial banks need to be identified on a country base.

Research objectives

The overall objective of the study is to examine the efficiency and identify the determinants of the financial performance of commercial banks in Ethiopia over the period 1999-00 to 2010-11. This study addresses the following interrelated research objectives:

- To measure the overall technical efficiency (OTEF), pure technical efficiency (PTEF), and scale efficiency (SEF) of Ethiopian commercial banks.
- To examine the cost efficiency (CEF) of Ethiopian commercial banks.
- To examine the profit efficiency (PEF) of Ethiopian commercial banks.
- To study the association between CEF and PEF of Ethiopian commercial banks.
- To examine the relationship between ownership structure and efficiency of banks in Ethiopia.
- To assess the trend in the market structure of the Ethiopian banking sector over the study period.
- To identify the factors which affect the performance of Ethiopian commercial banks, and to suggest measures for further development of Ethiopian banking sector.

Significance of the study

Understanding how the commercial banks in Ethiopia are efficiently operating and identifying the key factors that sway the banks' financial performances is valuable to the various claimants of the banking industry. Indeed, banks are supposed to balance and congregate the interests and aspirations of the various individuals, organizations and the public at large. Policy makers call for banks to efficiently operate and ensure appropriate allocation of resources by channeling resources from those that have surplus capital to those who are in need of the capital. By doing so, banks could support investment, trade and commerce to grow vigorously.

Investors require banks to earn sufficient returns on their investment and faire degree of surety for their investment. Consumers, on the other hand, necessitate banks to cater quality and variety banking services at the right time, and charge them fair prices. Thus, banks need to bring in new ways of doing business and fit with the ever changing business environment, technology and consumer preferences to stay competitive and earn sufficient returns. The management of banks needs to ensure that the banks are operating efficiently. Banks are also required to discharge their social responsibilities by taking active part in all rounded local and national development endeavors. The banks need to ensure efficient use of resources while at the same time delivering quality services to their customers and earning sufficient returns on shareholders' equity.

The sine qua non of understanding the financial performances of banks is, thus, identifying those banks that are performing well from those that are not. Such analysis will let policy makers and managers take appropriate measures and devise policies and strategies in order to get better the financial performances of the banks. Furthermore, divulging the key factors that encroach on the efficiency as well as the profitability of banks will backup

managers' deeds in ensuring efficient management of banking operations in a bid to boost up bank profitability and enhance bank efficiency. Thus, the study on efficiency analysis and determinants of financial performance of commercial banks in Ethiopia will help managers and policymakers to determine the level of efficiency of Ethiopian commercial banks and understand the key factors that influence the performance of commercial banks on the basis of which they may frame policies and mechanisms aimed at enhancing the efficiency and profitability of the banks.

Methodology of the study

Data type and source

a) **Data type:** As the study is intended to examine the financial performance of commercial banks, it is reasonably sufficient to make use of secondary data since they adequately capture past financial performance of the commercial banks under consideration. The unbalanced panel data of the commercial banks under study were used to address the objectives set forth for the study. The panel dada that has been used by the study is unbalanced because not all banks have data all over the study period.

b) **Data sources:** For the purpose of the study, the data from secondary sources were collected and analyzed. The secondary sources of data included the records of National Bank of Ethiopia, Ministry of Finance and Economic Development of Ethiopia, reports of the

researchers and scholars, and reports of individual banks under consideration for the period under study.

Scope and time coverage of the study

a) **Time coverage of the study:** The study was carried out over the period 1999/00- to 2010-11, covering 12 years in total. The study period began 1999-00 since the base year of the country has been changed from 1980-81 to 1999-00. The study period ended 2010-11 in view of the fact that the commercial banks have not published their audited annual financial reports for the year 2011-12.

c) **Scope of coverage:** The study covers all commercial banks (deposit banks) that have been in operation over the study period. Though AB and AAIB have been in operation in 2010-11, the study excluded these two commercial banks due to lack of data. Moreover, the study excludes one of the biggest state owned banks, the Development bank of Ethiopia which is not a deposit bank, for homogenization reason. Thus, the study covered only 14 out of 16 commercial banks that have been in operation in 2010-11 based on availability of data to achieve the objectives of the study. By pooling the unbalanced panel data, it has been possible to have a total of 118 observations over the entire period under study.

The DEA model of measuring efficiency

The study has used various measures of efficiency such as technical, pure technical, scale, allocative, cost and profit efficiencies of Ethiopian commercial banks. The most important issue in measuring bank efficiency is the technique one has to employ to measure the efficiency of the commercial banks. The study employed the Data Envelopment Analysis model (DEA), a non-parametric technique, to estimate the various measures of efficiency of the banks because of the following reasons:

1. DEA is less data demanding and requires small sample size compared to the parametric measures of efficiency.
2. Compared to the parametric techniques, DEA requires no specification of the functional form of the production function, handles multiple inputs and outputs, needs no assumption as to the relative importance of the inputs and outputs, and provides targets for enhancement for the inefficient units, and
3. Since commercial banks in Ethiopia provide various financial services, it complicates the use of parametric approach to measure technical efficiency, and thus the DEA model is chosen.

   Though DEA can be estimated either as input-oriented or output-oriented index, the study preferred the input-oriented DEA model in measuring the efficiency of the commercial banks since the managers of the commercial banks have more discretion on controlling the inputs than the outputs.

Thus, efficiency of the banks is measured by holding output fixed and determining the maximum possible reduction in inputs.

Efficiency parameters

Overall technical efficiency: The overall technical efficiency (OTEF) indicates the quantity of inputs that could be reduced without affecting the output levels of a bank. The overall technical efficiency of the banks is measured using the CCR input oriented DEA model which takes the constant return to scale assumption into account. The model is:

$$Min_{\theta,\lambda}\ \theta$$

$$\text{St.} \quad Y\lambda \geq y_i$$

$$\theta x_i \geq X\lambda$$

$$\lambda \geq o$$

Pure technical efficiency: The pure technical efficiency (PTEF) indicates the extent of overall inefficiency that is caused by managerial inefficiency or wastage of resources without scale effect. The pure technical efficiency of the banks is measured using the BCC input oriented DEA model which assumes the variable return to scale. The model is:

$$Min_{\theta,\lambda}\ \theta$$

$$\text{St.} \quad Y\lambda \geq y_i$$

$$\theta x_i \geq$$

$$\lambda \geq o$$

$$N1\lambda = 1$$

Scale efficiency: Scale efficiency (SEF) measures the extent of overall inefficiency that is caused due to wrong choice of scale of bank operation. The scale efficiency of the banks is estimated by dividing the efficiency scores of the banks obtained using the CCR model to the scores obtained using the BCC model, i.e.,

$$\boldsymbol{SEF = OTEF/PTEF}$$

Cost efficiency: Cost efficiency measures the magnitude of costs that could be reduced without making any change in the level of a bank's output had it operated efficiently. The model used for the purpose is:

$$Min \sum_{i=1}^{k} w_i \, x_{io}^*$$

St:

$$\sum \lambda_j \;\; x_{ij} - x_i^* \leq \; 0, \qquad i = 1, 2, 3 \ldots k$$

$$\sum \lambda_j \;\; y_{mj} - \; y_{mo} \geq \; 0, \qquad j = 1, 2, 3 \ldots k$$

$$\lambda_j, \;\; x_{io}^* \geq 0$$

$$\sum \lambda_j \; = 1$$

Allocative efficiency: Allocative efficiency (AEF) measures the level of inefficiency of a bank due to its failure to use the optimum combination of its inputs, given the prices of the respective inputs. The allocative

efficiency is estimated by dividing the cost efficiency of a bank by its pure technical efficiency:

$$\boldsymbol{AEF = CEF/PTEF}$$

Profit efficiency: Profit efficiency (PEF) measures the extent a bank's profit is far from the profit of the best-practice bank given the same level of outputs. The model used to estimate the profit efficiency of the banks is:

$$Max \sum_{r=1}^{m} q_{ro} y_{ro}^{*} - \sum_{i=1}^{k} w_{io} x_{io}^{*}$$

$St.$

$$\sum_{j=1}^{n} \lambda_j x_{ij} - x_{io}^{*} \leq 0$$

$$\sum_{j=1}^{n} \lambda_j y_{rj} - y_{ro}^{*} \geq 0$$

$$x_{io}^{*} \leq x_{io} \, , y_{ro}^{*} \geq y_{ro}, x_j \geq 0$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

Where, j=1, 2, 3….n, r=1, 2, 3…m, and i= 1, 2, 3…k

Determinants of bank performance

The study used ROAA as a measure of bank performance against which a number of internal and external factors are regressed. The internal factors include capital adequacy, bank size, credit risk, liquidity, operational efficiency, diversification and loan intensity, while the external factors include market share, market concentration, real GDP growth rate and annual inflation rate. To identify the key factors that affect the profitability of the banks the study used the fixed effects model. The fixed effects model is preferred to the random effects model following the Hausman test. The fixed effects model formulated for the purpose is:

Market structure of the banking sector

So as to examine the trend in the market structure of the banking sector one-bank concentration ratio (1 BCR), three-bank concentration ratio (3 BCR) and HHI based on total deposits and total assets are used in the study.

Data presentation, analysis and interpretation techniques

Once the annual financial data of all the commercial banks were obtained, tabulation of the data and graphic presentation was made. The analysis techniques employed include ratios, percentages, averages (mean), Kruskal-Wallis test, Pearson correlation, Spearman rank correlation and regression analysis. The outputs of the study were computed using STATA version10 and MINTAB version 16 software packages, and DEA Frontier version 2011. Finally, the findings of the study were interpreted to draw the policy implications of the results in relation to efficiency, and profitability of commercial banks in Ethiopia.

Major findings of the study

The finding of the study indicates that the commercial banks operating in Ethiopia have long way to go to enhance their efficiency. The study indicates that the banks could have reduced the quantity of inputs used on average by 24.35 percent. The study finds that the over technical inefficiency of the banks is caused due to both wastage of resources and inappropriate choice of scale of bank operation. The study reveals that increasing return to scale is the most predominant scale inefficiency of Ethiopian commercial banks. This indicates that most of the commercial banks in Ethiopia are excessively small for scale of their operation and thus are operating at sub-optimal scale of operation.

Furthermore, the study finds higher levels of inefficiency on the cost side than on the profit side. The study also finds a positive and significant correlation between the cost efficiency and the profit efficiency of the banks, showing that banks that achieve higher levels of cost efficiency are at the same time profit efficient. As far as ownership and efficiency of the banks is concerned, the study finds relatively higher scores of overall technical efficiency, pure technical efficiency, scale efficiency and profit efficiency (PEF) for the state owned commercial banks. On the other hand, the study finds relatively higher scores of cost efficiency and allocative efficiency for the private commercial banks.

The study reveals that factors which are under the control of the management of banks are the most determinant factors that affect the financial performance of the banks. The study finds diversification, operational efficiency, capital adequacy, bank size, and loan intensity as key internal factors that influence the financial performance of the banks. Of the external factors, market concentration and real GDP growth rate are found to significantly affect the financial performance of the banks. Market share, credit risk and annual inflation rate, however, are found to have less effect on the banks' financial performance. Furthermore, the

result of the study characterizes the nature of Ethiopian banking sector as an oligopoly type, a market dominated by few banks, each of which has control over the market where there is a high level of market concentration.

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